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RESEARCH ON ALKALOIDS OF HELIOTROPIMUM LASIOCARPUM:  
STRUCTURE OF HELIOTROPIN:

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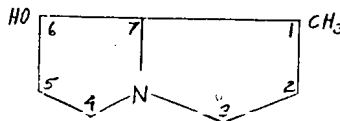
imeni Sergey Ordzhonikidze

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Submitted 31 May 1948

Preliminary work on heliotrine by the authors left only the position of the two hydroxyl groups and the double bond of heliotridine (an aminoglycol formed during the hydrolysis of the alkaloid) to be cleared up.

To accomplish this, the amino alcohol oxyheliotridane ( $C_8H_{13}ON$ ), product of the catalytic reduction of heliotrine, was oxidized to produce an amino ketone ( $C_8H_{13}ON$ ) identical with retronecanol. Since retronecanol has the structure of a 1-methyl-6-ketopyrrolizidine, oxyheliotridane should have the following structure:



In this manner the position of the reduction-resistant hydroxyl group of heliotridine was established.

An amino alcohol, identical with isoretronecanol, and having the following structure:

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## CLASSIFICATION

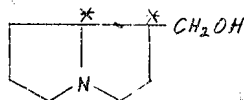
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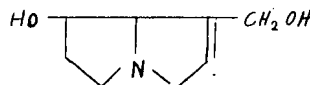
was prepared by elimination of the secondary hydroxyl group and the double bond of heliotridine. In this manner the position of the secondary hydroxyl group of heliotridine was determined (this group being unresistant to reduction).

When only the secondary hydroxyl group of heliotridine was eliminated, supinidine, an unsaturated amino alcohol, was obtained. The structure of supinidine, also given in a previous article, is:

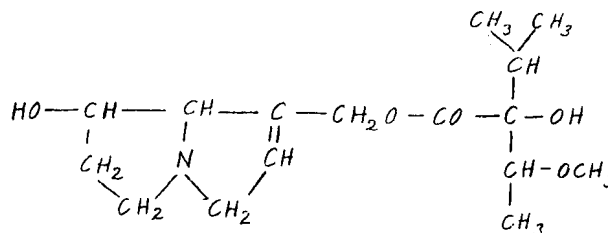


From this it was deduced that the double bond of heliotridine should be between the first and the second carbon atoms of the pyrrolizidine ring.

Heliotridine, then, must have the structure:



and heliotrine itself (previously described from knowledge of the structure of heliotrinic acid) should have the structure:

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